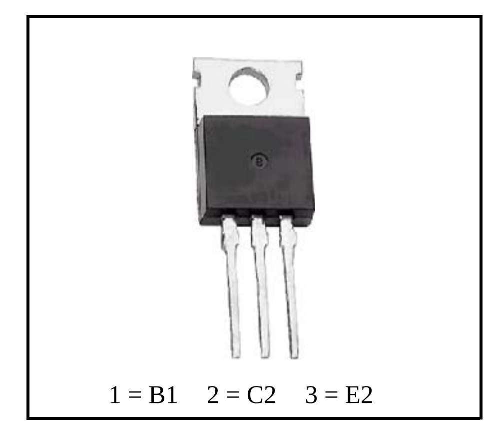
NPN **Si-Epitaxial PlanarTransistors** **NPN**
Si-Epitaxial PlanarTransistoren

Version 2004-06-21



Collector current – Kollektorstrom	5 A
Plastic case Kunststoffgehäuse	TO-220AB
Weight approx. – Gewicht ca.	2.2 g
Plastic material has UL classification 94V-0 Gehäusematerial UL94V-0 klassifiziert	
Standard packaging taped and reeled Standard Lieferform gegurtet auf Rolle	

Maximum ratings (T_A = 25°C) **Grenzwerte (T_A = 25°C)**

			TIP120	TIP121	TIP122
Collector-Emitter-voltage	B open	V_{CE0}	60 V	80 V	100 V
Collector-Base-voltage	E open	V_{CB0}	60 V	80 V	100 V
Emitter-Base-voltage	C open	V_{EB0}	50 V		
Power dissipation – Verlustleistung without cooling – ohne Kühlung with cooling – mit Kühlung	 T_C = 25°C	 P_{tot} P_{tot}	 2 W [1]) 65 W		
Collector current – Kollektorstrom (dc)		I_C	5 A		
Peak Collector current – Kollektor-Spitzenstrom		I_{CM}	8 A		
Base current – Basisstrom (dc)		I_B	120 mA		
Junction temperature – Sperrschichttemperatur		T_j	- 65…+ 150°C		
Storage temperature – Lagerungstemperatur		T_S	- 65…+ 150°C		

Characteristics (T_j = 25°C) **Kennwerte (T_j = 25°C)**

			Min.	Typ.	Max.
Collector-Emitter cutoff current – Kollektorreststrom					
I_B = 0, V_{CE} = 30 V	TIP120	I_{CE0}	–	–	500 nA
I_B = 0, V_{CE} = 40 V	TIP121	I_{CE0}	–	–	500 nA
I_B = 0, V_{CE} = 50 V	TIP123	I_{CE0}	–	–	500 nA
Collector-Base cutoff current – Kollektorreststrom					
I_E = 0, V_{CB} = 60 V	TIP120	I_{CB0}	–	–	200 nA
I_E = 0, V_{CB} = 80 V	TIP121	I_{CB0}	–	–	200 nA
I_E = 0, V_{CB} = 100 V	TIP122	I_{CB0}	–	–	200 nA

[1]) Valid, if leads are kept at ambient temperature at a distance of 5 mm from case
Gültig, wenn die Anschlußdrähte in 5 mm Abstand von Gehäuse auf Umgebungstemperatur gehalten werden

Characteristics (T_j = 25°C) **Kennwerte (T_j = 25°C)**

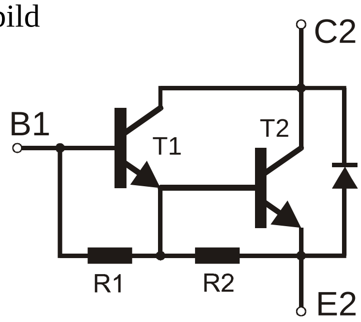
		Min.	Typ.	Max.
Emitter-Base cutoff current – Emitterreststrom				
I_C = 0, V_{EB} = 5 V	I_{EB0}	–	–	2 mA
Collector saturation voltage – Kollektor-Sättigungsspg. [1])				
I_C = 3 A, I_B = 12 mA	V_{CEsat}	–	–	2 V
I_C = 5 A, I_B = 20 mA	V_{CEsat}	–	–	4 V
Base-Emitter on-voltage – Basis-Emitter-Spannung [1])				
I_C = 3 A, V_{CE} = 3 V	V_{BEon}	–	–	2.5 V
DC current gain – Kollektor-Basis-Stromverhältnis [1])				
V_{CE} = 3 V, I_C = 0.5 A	h_{FE}	1000	–	–
V_{CE} = 3 V, I_C = 3 A	h_{FE}	1000	–	–
Small signal current gain – Kleinsignal-Stromverstärkung				
V_{CE} = 4 V, I_C = 3 A, f = 1 MHz	h_{fe}	4	–	–
Collector-Base Capacitance – Kollektor-Basis-Kapazität				
V_{CB} = 10 V, I_E = i_e = 0, f = 100 kHz	C_{CB0}	–	–	200 pF

Thermal resistance – Wärmewiderstand

junction to ambient air – Sperrschicht zu umgebender Luft	R_{thA}	62.5 K/W [2])
junction to case – Sperrschicht zu Gehäuse	R_{thC}	2 K/W

Admissible torque for mounting Zulässiges Anzugsdrehmoment	M 4	9 ± 10% lb.in. 1 ± 10% Nm
Recommended complementary PNP transistors Empfohlene komplementäre PNP-Transistoren		TIP125, TIP126, TIP127

Equivalent Circuit – Ersatzschaltbild



[1]) Tested with pulses t_p = 300 µs, duty cycle ≤ 2% – Gemessen mit Impulsen t_p = 300 µs, Schaltverhältnis ≤ 2%
[2]) Valid, if leads are kept at ambient temperature at a distance of 5 mm from case
Gültig, wenn die Anschlußdrähte in 5 mm Abstand von Gehäuse auf Umgebungstemperatur gehalten werden